CENTER FOR TOXICOLOGY
AND ENVIRONMENTAL HEALTH, LLC

CTEH® Project #40442
West Fertilizer Plant Explosion
Preliminary Summary of Air Monitoring Results
April 18, 2013 – April 24, 2013

This report discusses real-time air monitoring data collected between the time CTEH® arrived on site on 4/18/2013 and 10:00 on 4/24/2013 in support of remediation operations conducted near the West Fertilizer Plant Explosion in West, TX.

To date, real-time air monitoring has been conducted for the following analytes: particulate matter (PM_{10}), volatile organic compounds (VOCs), ammonia (NH_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lower explosive limit (LEL) and oxygen (O_2). The concentrations of these analytes within air have been assessed via remote-telemeting AreaRAEs and hand-held instruments including MultiRAEs and Gastec® colorimetric detector tubes.

Tables 1 and 2 (below) display data summaries for hand-held and AreaRAE instruments, respectively. Site maps and charts are available as attachments.

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CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Table 1: Hand-held Real-time Air Monitoring Summary[1]
April 18, 2013 – April 24, 2013

Analyte	Instrument	Count of Readings	Count of Detections	Average	Range
Community					
Ammonia	Gastec 3L	50	0	NA	< 0.2 ppm
	MultiRAE	129	0	NA	< 1 ppm
LEL	MultiRAE	31	0	NA	< 1 %
NO_2	Gastec 9L	11	0	NA	< 0.1 ppm
	MultiRAE	34	0	NA	< 0.1 ppm
O_2	MultiRAE	37	37	20.9 %	20.3 - 21.3 %
PM_{10}	AM510	170	152	0.014 mg/m^3	0.002 - 0.190 mg/m^3
SO_2	MultiRAE	2	0	NA	< 1 ppm
VOC	MultiRAE	49	0	NA	< 0.1 ppm
Rail Right of Way					
Ammonia	Gastec 3L	7	6	1.8 ppm	1.0 - 5.0 ppm
	MultiRAE	11	1	2 ppm	2 ppm
LEL	MultiRAE	2	0	NA	< 1 %
NO_2	MultiRAE	3	0	NA	< 0.1 ppm
O_2	MultiRAE	1	1	20.4 %	20.4 %
VOC	MultiRAE	10	0	NA	< 0.1 ppm
Work Area					
Ammonia	Gastec 3L	16	12	2.0 ppm	0.5 - 5.0 ppm
	MultiRAE	19	3	1 ppm	1 - 2 ppm
LEL	MultiRAE	4	0	NA	< 1 %
NO_2	Gastec 9L	1	0	NA	< 0.1 ppm
	MultiRAE	6	0	NA	< 0.1 ppm
O_2	MultiRAE	3	3	20.8 %	20.7 - 20.9 %
VOC	MultiRAE	9	1	0.1 ppm	0.1 ppm

[1]*Please note: The data displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format.*

Table 2
Stationary AreaRAE Monitoring Stations Data Logged
4/18/2013 to 4/24/2013

Unit	Date Range	Analyte	Count of Readings	Count of Detections	Average of Detections	Max Detection
AR01	04/18/2013 - 04/19/2013	LEL	7012	0	NA	< 1 %
		NH3	5954	0	NA	< 1 ppm
		NO2	5954	4117	0.1 ppm	0.2 ppm
		O2	7012	7012	21.0 %	21.9 %
		VOC	7012	646	0.1 ppm	0.2 ppm
AR02	04/18/2013 - 04/19/2013	LEL	9203	0	NA	< 1 %
		NH3	8109	764	5 ppm	15 ppm
		NO2	5160	4234	4.7 ppm	10.4 ppm
		O2	9203	9203	21.0%	22.4 %
		VOC	9203	1193	0.3 ppm	1.8 ppm
AR03	04/18/2013 - 04/19/2013	LEL	8421	0	NA	< 1 %
		O2	8421	8421	21.1 %	22.9 %
		VOC	8421	66	0.8 ppm	4 ppm
AR04	04/18/2013 - 04/19/2013	LEL	2517	0	NA	< 1 %
		O2	2517	2517	21.2%	21.5 %
		VOC	2517	0	NA	< 0.1 ppm
AR05	4/19/2013	LEL	2289	0	NA	< 1 %
		O2	2289	2289	21.2 %	21.4 %
		VOC	2289	0	NA	< 0.1 ppm
AR07	04/18/2013 - 04/19/2013	LEL	8623	224	4 %	5%
		NH3	8623	0	NA	< 1 ppm
		NO2	8623	256	0.3 ppm	0.5 ppm
		O2	8623	8623	20.9 %	21.4 %
		VOC	8623	75	0.2 ppm	0.7 ppm
AR09	04/18/2013 - 04/19/2013	LEL	7325	0	NA	< 1 %
		NH3	7315	0	NA	< 1 ppm
		NO2	7315	534	0.1 ppm	0.3 ppm
		O2	7325	7325	20.9 %	21.4 %
		VOC	7325	10	0.2ppm	0.2 ppm
AR10	04/18/2013 - 04/21/2013	LEL	7749	0	NA	< 1 %
		NH3	6817	2272	21 ppm	200 ppm
		NO2	6531	495	0.1 ppm	0.3 ppm
		O2	7749	7749	20.9 %	21.5 %
		VOC	7749	2079	2.1 ppm	169.9 ppm
AR11	04/18/2013 - 04/19/2013	LEL	5144	0	NA	< 1 %
		NH3	5144	0	NA	< 1 ppm
		NO2	5144	31	0.1 ppm	0.1 ppm
		O2	5144	5144	20.9 %	21.5 %
		VOC	5144	2	0.1 ppm	0.1 ppm

Unit	Date Range	Analyte	Count of Readings	Count of Detections	Average of Detections	Max Detection
AR12	04/19/2013 - 04/21/2013	LEL	9828	0	NA	< 1 %
		NH3	9828	0	NA	< 1 ppm
		NO2	9828	467	0.3 ppm	0.8 ppm
		O2	9828	9828	20.9 %	21.3 %
		VOC	9828	0	NA	< 0.1 ppm
AR13	04/19/2013 - 04/24/2013	LEL	24631	0	NA	< 1 %
		NH3	24631	3	3 ppm	1 ppm
		NO2	24631	43	0.1ppm	0.2 ppm
		O2	24631	24631	20.9 %	21.3 %
		VOC	24631	3559	0.1 ppm	0.2 ppm
AR14	04/20/2013 - 04/24/2013	LEL	22490	0	NA	< 1 %
		NH3	22490	930	1 ppm	41 ppm
		NO2	22490	27	0.1 ppm	0.1 ppm
		O2	22490	22490	20.9 %	21.4 %
		VOC	22490	437	0.2 ppm	2.3 ppm
AR15	04/19/2013 - 04/21/2013	LEL	9139	0	NA	< 1 %
		NH3	9139	408	1 ppm	1 ppm
		NO2	9139	10	0.1 ppm	0.1 ppm
		O2	9139	9139	20.9 %	21.4 %
		VOC	9118	14	0.2 ppm	0.6 ppm
AR16	04/20/2013 - 04/24/2013	LEL	21758	0	NA	< 1 %
		NH3	21758	1389	1 ppm	4 ppm
		NO2	21758	1	0.1 ppm	0.1 ppm
		O2	21758	21758	21.0 %	22.1 %
		VOC	21758	2335	0.5 ppm	5.2 ppm
AR17	04/21/2013 - 04/24/2013	LEL	14354	0	NA	< 1 %
		NH3	14354	3375	1 ppm	2 ppm
		NO2	14354	0	NA	< 0.1 ppm
		O2	14354	14354	20.9 %	20.9 %
		VOC	14354	286	0.5 ppm	1.2 ppm
AR18	04/21/2013 - 04/24/2013	LEL	14302	0	NA	< 1 %
		NH3	14302	25	1 ppm	1 ppm
		NO2	14302	0	NA	< 0.1 ppm
		O2	14302	14302	20.7 %	21.3 %
		VOC	14302	0	NA	< 0.1 ppm

[1] *The data in this table may include electronic drift. Drift is defined as any interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere. Humidity and temperature changes throughout the monitoring period are typical sources of drift. Additionally, the data has not undergone complete QAQC as of this time.*

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Appendix

Air Monitoring Zone Classifications[1]
April 24, 2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

[1] All monitoring performed outside of the Work Area boundary and the Rail Road right of way is considered Community Monitoring.

Projection System: *UTM Zone 14* **Coordinate System:** *WGS84* **Print Date:** *4/24/2013*

AreaRAE Monitoring Station Locations
4/18/2013 to 4/24/2013

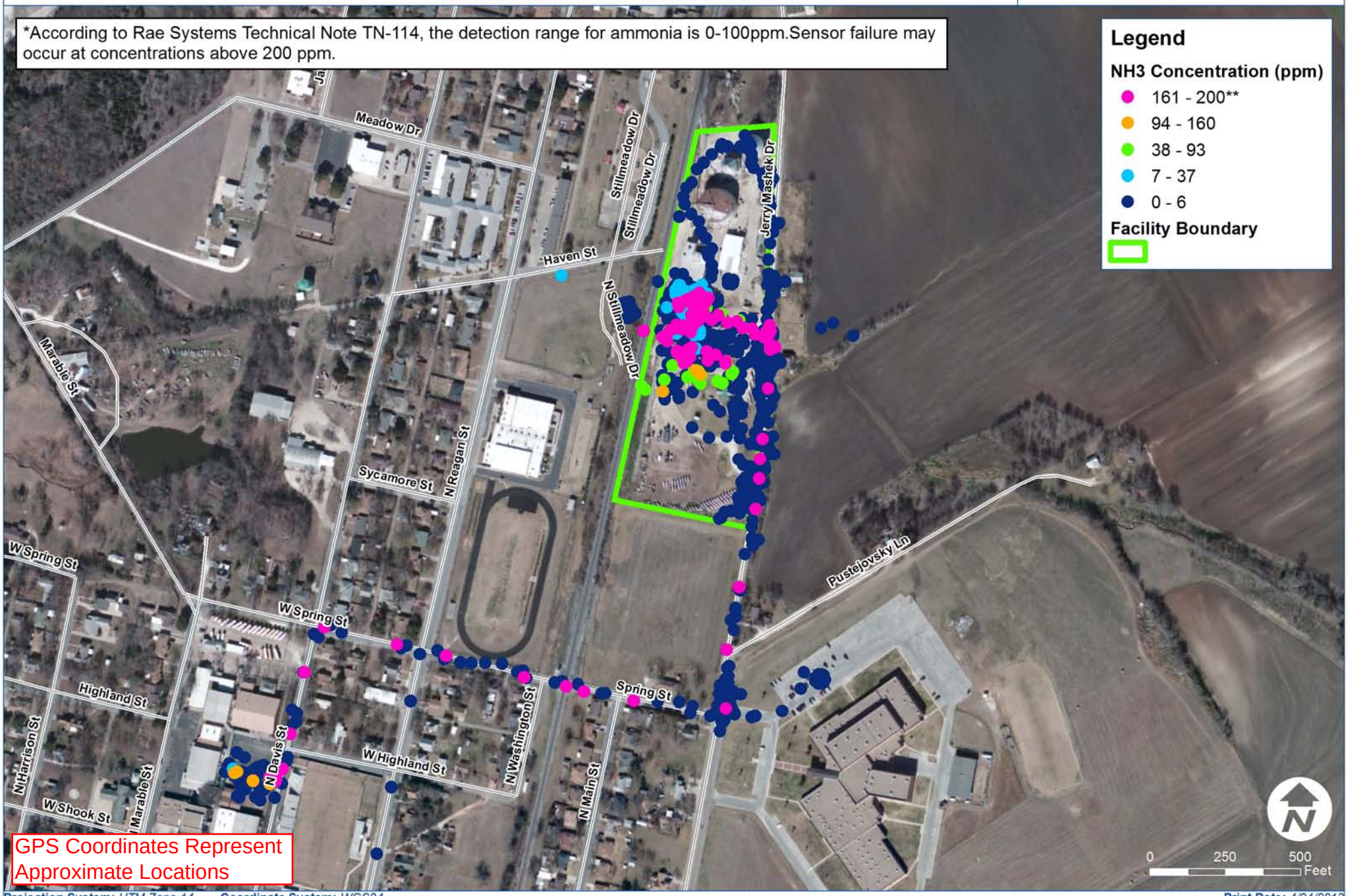
Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

Mobile AreaRAE 10 NH3 Concentrations Logged During Worker Site Entry 4/18/2013 to 4/21/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

*According to Rae Systems Technical Note TN-114, the detection range for ammonia is 0-100ppm.Sensor failure may occur at concentrations above 200 ppm.



Projection System: *UTM Zone 14* **Coordinate System:** *WGS84* **Print Date:** *4/24/2013*

Mobile AreaRAE 10 VOC Concentrations Logged During Worker Site Entry 4/18/2013 to 4/21/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

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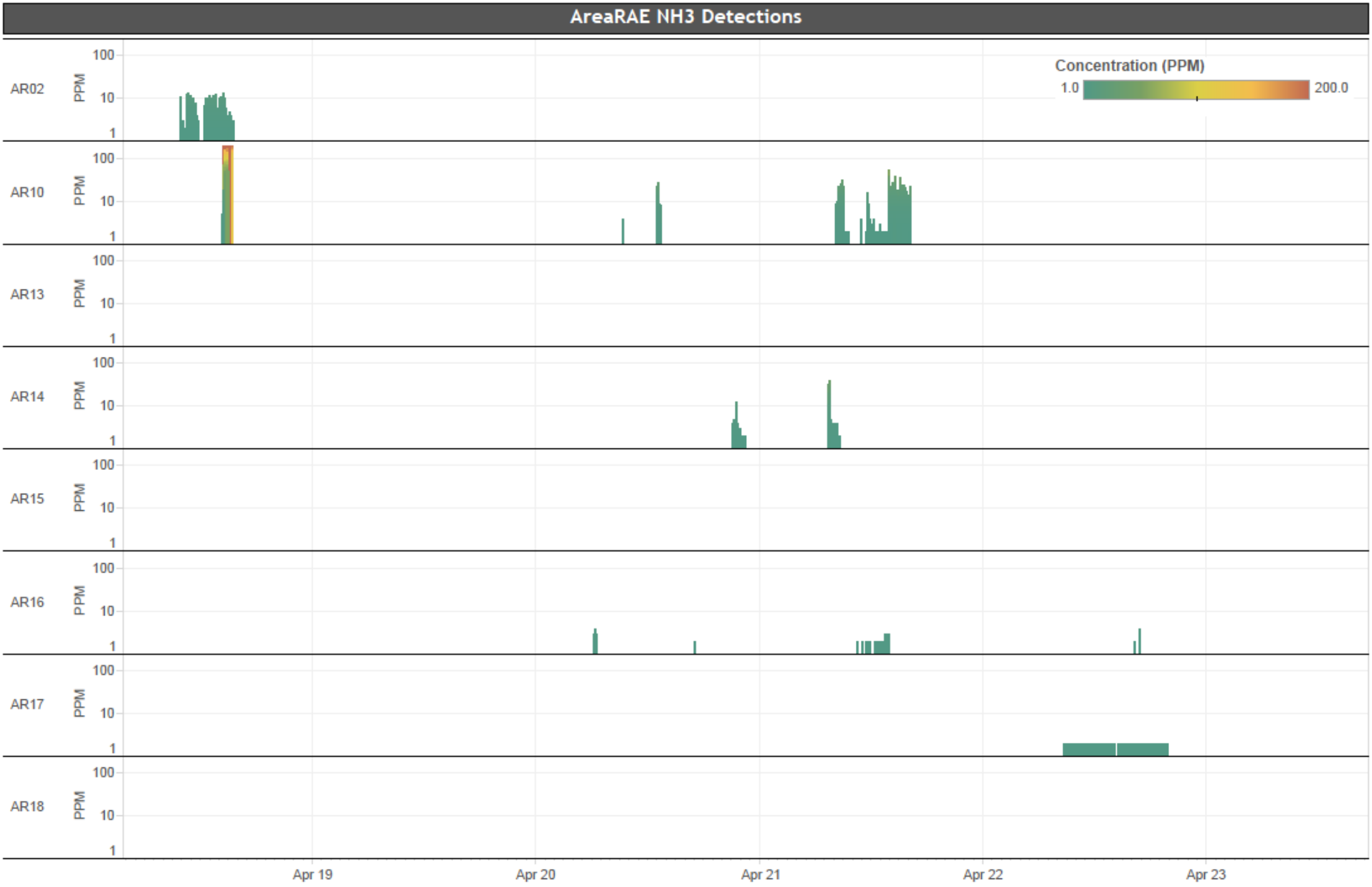

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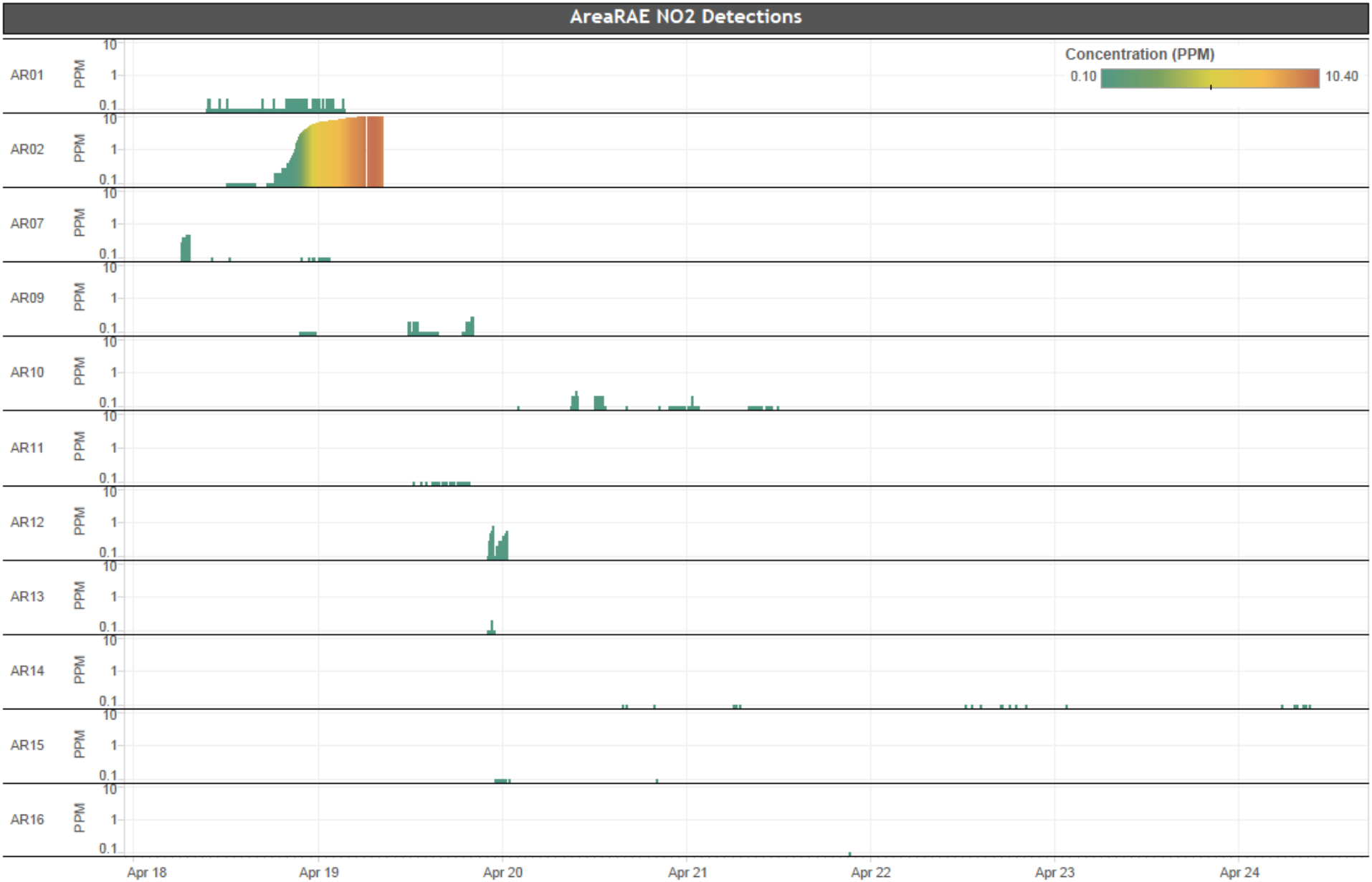

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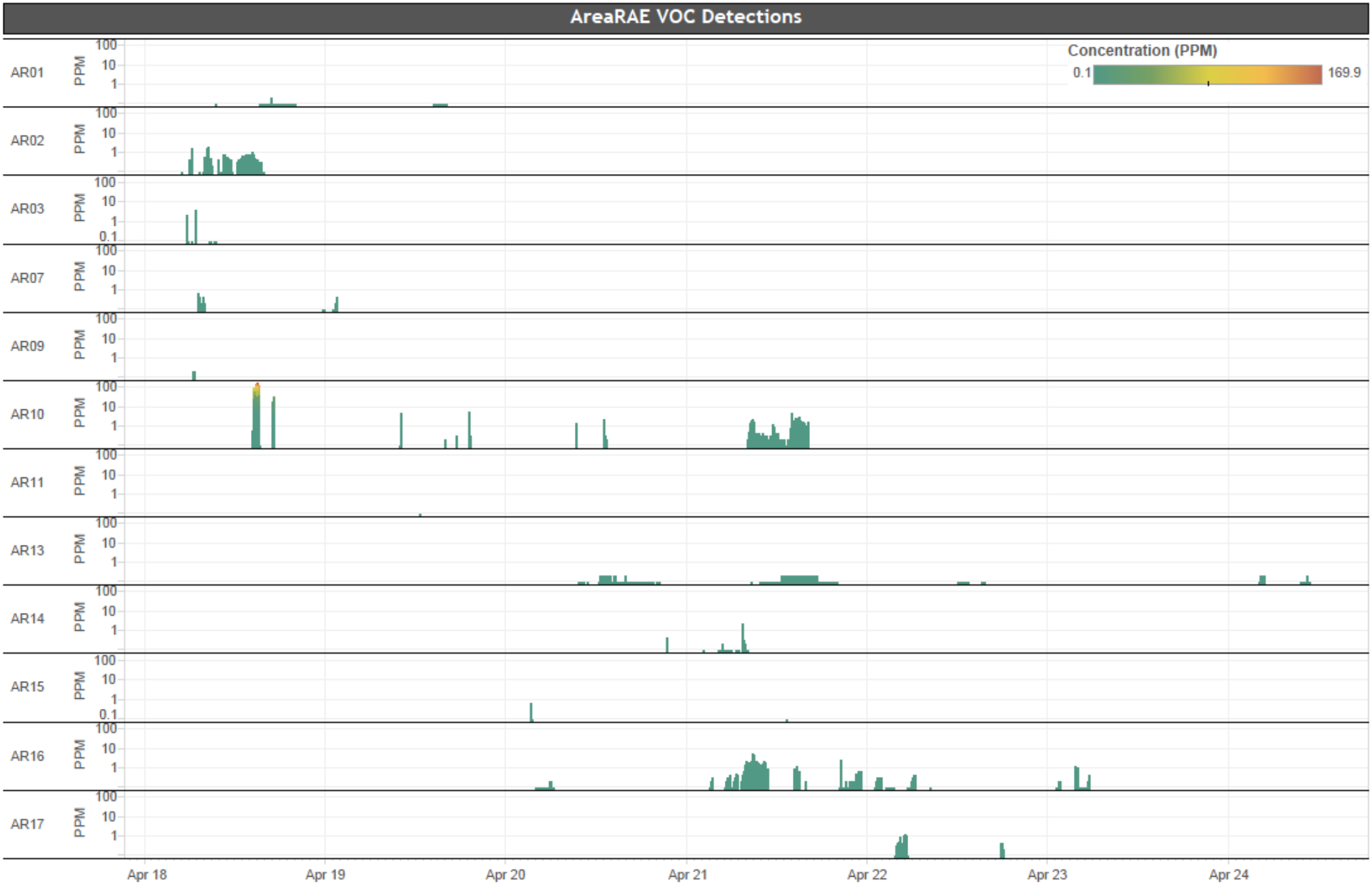


Community Fixed Real-Time Monitoring Locations

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

Manually Logged Ammonia Real-Time Readings 4/18/2013 to 4/23/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: UTM Zone 14 Coordinate System: WGS84 Print Date: 4/24/2013

Manually Logged VOC Real-Time Readings 4/18/2013 to 4/21/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

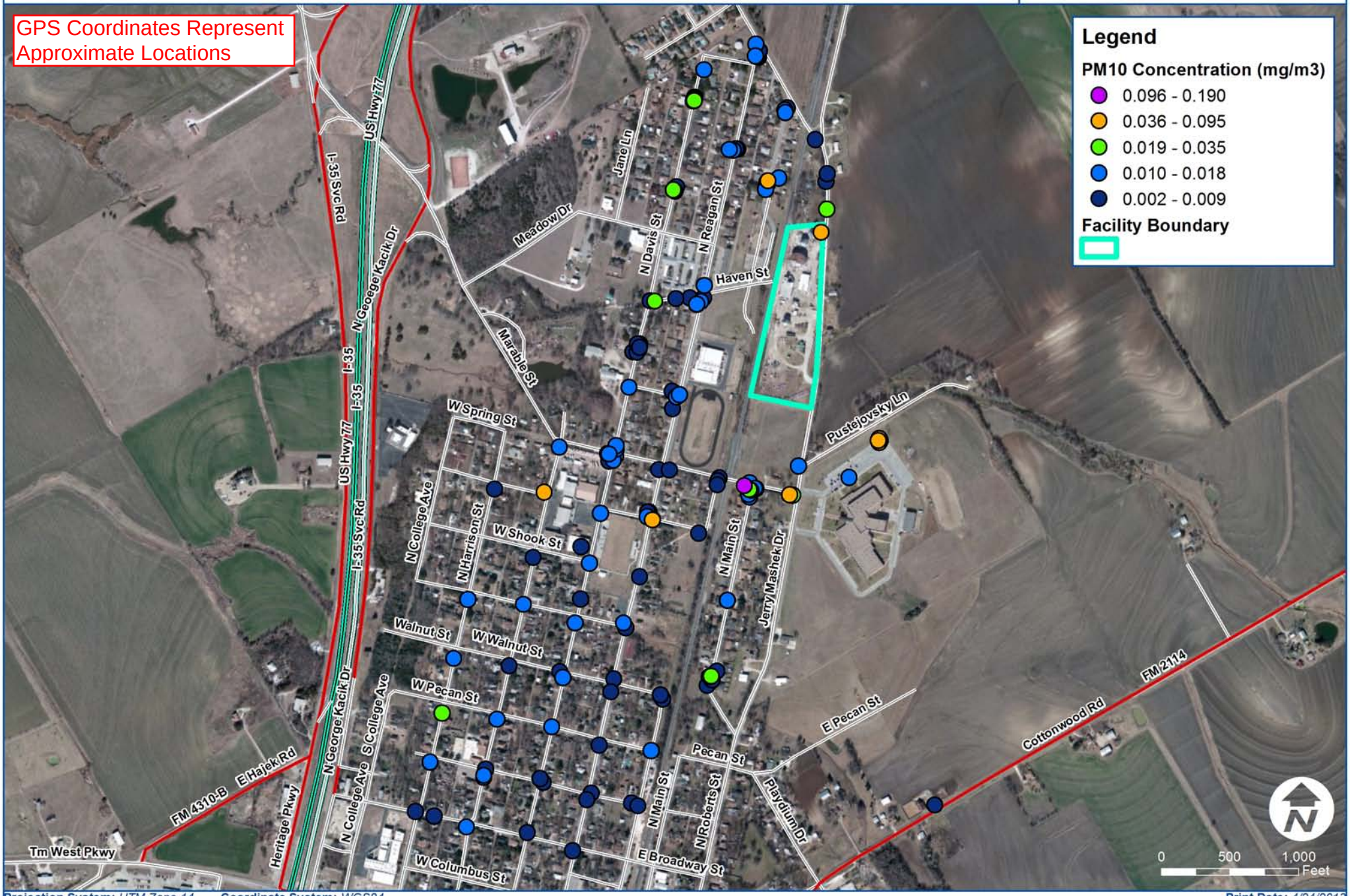
Manually Logged NO_2 Real-Time Readings 4/18/2013 to 4/21/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

Manually Logged PM10 Real-Time Readings 4/18/2013 to 4/19/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan



Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

Manually Logged SO_2 Real-Time Readings 4/18/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

Manually Logged VOC Real-Time Readings 4/18/2013 to 4/23/2013

Project: 40442
Client: OMI
City: West, TX
County: McLennan

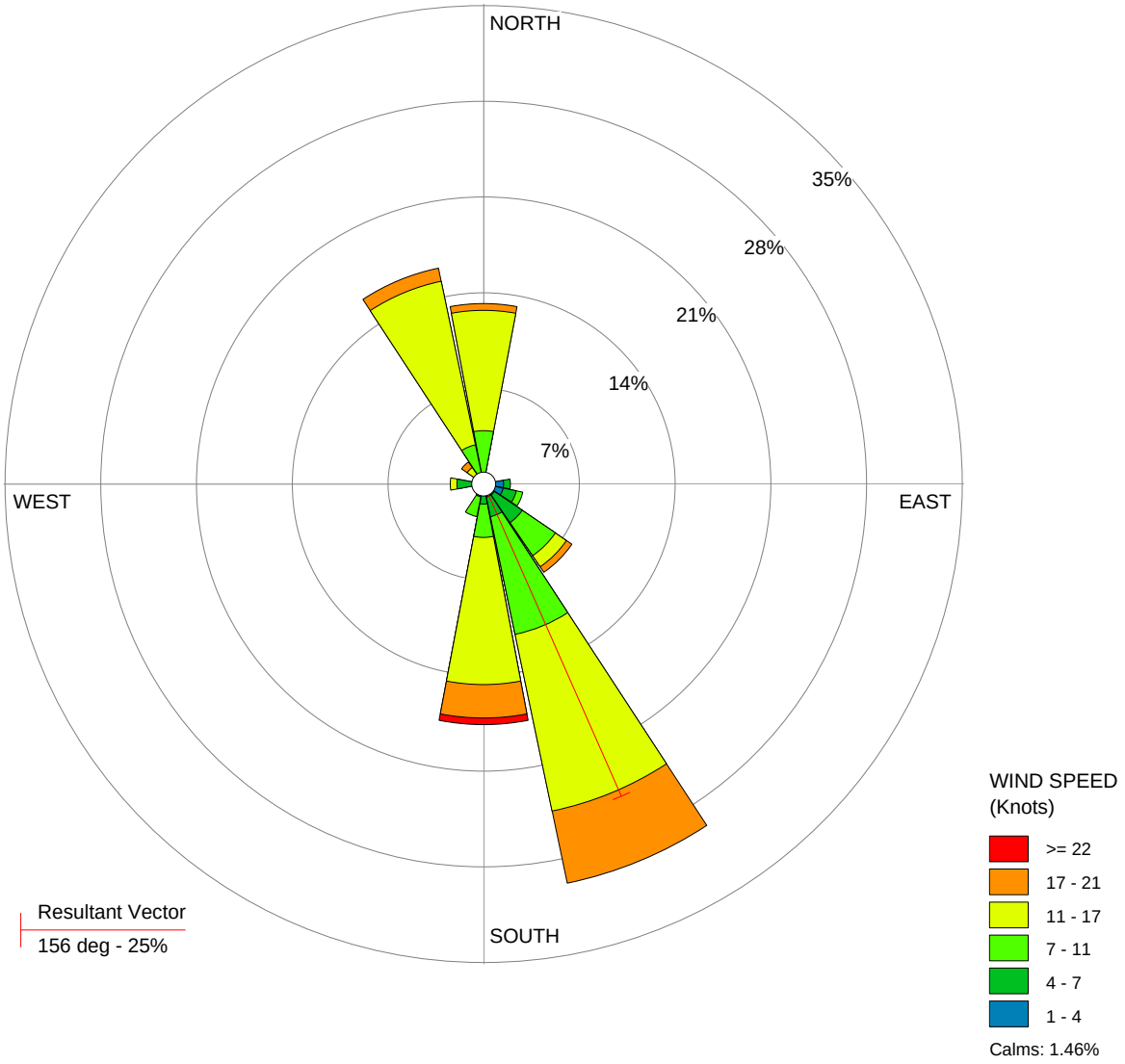
Projection System: *UTM Zone 14* Coordinate System: *WGS84* Print Date: *4/24/2013*

WIND ROSE PLOT:

Wind Speed and Direction 4/18/2013 to 4/24/2013
West, Tx

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

Met Station: KACT Waco, TX

COMPANY NAME:

CTEH

MODELER:

Jason Callahan

CALM WINDS:

1.46%

AVG. WIND SPEED:

11.87 Knots

PROJECT NO.:

40442 - OMI

WRPLOT View - Lakes Environmental Software